AMENDMENTS TO THE CLAIMS

Claims 1-15 (Canceled)

Claim 16 (Currently Amended): A reinforced silica substance comprising

a silica glass substance comprising amorphous silica; and

a layer comprising crystalline quartz on the silica glass substance, where the layer comprising crystalline quartz does not include a crystallization promoter.

Claim 17 (Previously Presented): The reinforced silica substance according to Claim 16, wherein the layer comprising crystalline quartz is porous.

Claim 18 (Previously Presented): The reinforced silica substance according to Claim 16, wherein the layer comprising crystalline quartz is produced by a process comprising

coating the silica glass substance with a silica powder; and

sintering the silica powder.

Claim 19 (Previously Presented): The reinforced silica substance according to Claim 18, wherein

more than 20 weight% of the silica powder consists of silica particles each having a particle size of less than 10 μm; and

20 weight% or less of the silica powder consists of silica particles each having a particle size in a range of from 10 μm to 150 μm.

Claim 20 (Previously Presented): The reinforced silica substance according to Claim 16, wherein the reinforced silica substance is a crucible.

Claim 21 (Previously Presented): The reinforced silica substance according to Claim 20, wherein

the crucible comprises an inside surface and an outside surface; and

the layer comprising crystalline quartz is on at least part of the inside surface of the crucible.

Claim 22 (Previously Presented): The reinforced silica substance according to Claim 20, wherein

the crucible comprises an inside surface and an outside surface; and

the layer comprising crystalline quartz is on at least part of the outside surface of the crucible.

Claim 23 (Previously Presented): The reinforced silica substance according to Claim 20, wherein the layer comprising crystalline quartz is on the crucible in a ring configuration.

Claim 24 (Withdrawn): A method of making a reinforced silica substance, the method comprising

coating a silica glass substance with a silica powder;

sintering the silica powder; and

producing the reinforced silica substance of Claim 16.

Claim 25 (Withdrawn): The method according to Claim 24, wherein the sintering is at a temperature that is less than a crystallization temperature of the silica powder.

Claim 26 (Withdrawn): The method according to Claim 24, wherein

the reinforced silica substance is a crucible; and

the sintering comprises crystallizing the silica powder by melting silicon in the crucible.

Claim 27 (New): The reinforced silica substance according to Claim 16, wherein the layer comprising crystalline quartz consists of crystalline quartz.

SUPPORT FOR THE AMENDMENT

This Amendment amends Claim 16; and adds new Claim 27. Support for the amendments is found in the specification and claims as originally filed. In particular, support for Claim 16 is found in the specification at least at 2, lines 5-12 ("As for the prior art ..., the process has been known ... doping an impurity to the silica glass ... crystallizing the silica glass with a crystallization promoter, such as barium etc., ... However, ... the use of the impurity is disliked extremely") and page 11, lines 14-17 ("According to the above-described reinforcing process [of the present invention], it is not necessary to use the impurity, and the impurity is not intermixed since the fine quartz glass powder is crystallized by using the property of the powder itself."). Support for new Claim 27 is found in Claim 16. No new matter would be introduced by entry of these amendments.

Upon entry of these amendments, Claims 16-27 will be pending in this application. Claim 16 is independent.

REQUEST FOR RECONSIDERATION

Applicants respectfully request entry of the foregoing and reexamination and reconsideration of the application, as amended, in light of the remarks that follow.

Applicants thank the Examiner for the courtesies extended to their representative during the personal interview on July 14, 2006. Applicants thank the Examiner for the indication during the interview that the above amendments appear to overcome the cited prior art. Interview Summary dated July 14, 2006.

As discussed at the personal interview, conventional silica glass crucibles have a tendency to deform at the high temperatures required for pulling silicon single crystals from the crucibles. Specification at page 1, line 23.

To reduce the deformation, the present invention provides a reinforced silica substance (e.g., crucible) where a layer comprising crystalline quartz serves to reinforce a silica glass substance comprising amorphous silica. The layer comprising crystalline quartz does not include an impurity that promotes the crystallization of silica glass. As a result, a crucible of the reinforced silica substance can be used to pull silicon single crystals without contaminating the silicon single crystals with a crystallization promoter.

Claims 16-18 and 20-23 are rejected under 35 U.S.C. §102(e) over U.S. Patent No. 6,946,030 ("Schwertfeger"). In addition, Claims 16-18 and 20-23 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,053,359 ("Loxley-359"). Claim 19 is rejected under 35 U.S.C. §103(a) over Schwertfeger or Loxley-359 in view of U.S. Patent No. 5,389,582 ("Loxley-582").

Schwertfeger discloses a silica glass crucible produced from an amorphous silica glass green body include a crystallization-inducing compound, such as barium, aluminum and boron compounds, and mixtures thereof. Schwertfeger at abstract; column 3, lines 7-12.

Loxley-359 discloses vitreous silicon containing an aluminum compound as a crystallization aid. Loxley-359 at abstract.

Loxley-582 discloses quartz glass crucibles formed using a composition comprising a crystallization aid, such as basic aluminum acetate. Loxley-582 at abstract.

However, the cited prior art references, alone or combined, fail to suggest the independent Claim 16 limitations of "a layer comprising crystalline quartz on the silica glass substance, where the layer comprising crystalline quartz does not include a crystallization promoter".

Thus, the prior art rejections should be withdrawn.